

Application No.: 09/008,497

Docket No.: 21987-00033-US

IN THE CLAIMS:

Please cancel dependent claim ~~33~~ without prejudice or disclaimer as to the subject matter contained therein.

Please renumber dependent claim 40 as claim 39, to correct an obvious numbering error, as acknowledged in the Final Official Action.

Please amend independent claims 1, 21, 28, 31, 34, and 38 as follows.

B1 1. (Twice Amended) A method for manufacturing a semiconductor device having a buried conductive layer which is connected to one of a source and a drain of a MOS transistor and which extends over a gate electrode of said MOS transistor, said method comprising:

forming a first insulating film on a semiconductor substrate;

forming a first conductive film as said gate electrode and a second insulating film on said first insulating film, said gate electrode having a width equal to a minimum processing size achievable with a lithographic process technique;

forming a third insulating film on the whole surface of said semiconductor substrate having said first insulating film, said first conductive film and said second insulating film formed thereon;

selectively etching away said third insulating film so as to form a side wall insulating film including said third insulating film on each of both side faces of said first conductive film and said second insulating film and also to expose said semiconductor substrate in portions which are not covered with said side wall insulating film and not covered with said first conductive film;

diffusing impurities into said exposed portions of said semiconductor substrate so as to form a source and a drain in said semiconductor substrate;

forming a second conductive film to be a part of said buried conductive layer on the whole surface of said semiconductor substrate having said first insulating film, said first conductive film, said second insulating film and said side wall insulating film formed thereon;

forming a first mask layer on said second conductive film;

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processing said first mask layer to have a pattern which is separated into both side portions as to said first conductive film;

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(concl'd)

forming a second mask layer on the whole surface of said semiconductor substrate having said first insulating film, said first conductive film, said second insulating film, said side wall insulating film, said second conductive film and said first mask layer formed thereon;

selectively etching away said second mask layer so as to leave a pattern of said second mask layer on each of both side faces of the pattern of said first mask layer; and

selectively etching away said second conductive film with the patterns of said first and second mask layers as a mask so as to process said second conductive film into a pattern in which said second conductive film is separated on said second insulating film by an opening smaller than the minimum processing size, and wherein said first mask layer, said second mask layer and said second conductive film which extends over the gate electrode of the MOS transistor.

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21. (Amended) A method of forming a semiconductor device using a lithographic process having a predetermined minimum processing feature size, comprising:

forming a semiconductor element in a substrate;

forming a conductive layer over the semiconductor element and the substrate;

forming a first mask layer on the conductive layer;

patterning the first mask layer to form a slit dividing the first mask layer into at least two mask portions, the slit having a width equal in size to the minimum processing feature size and having side walls corresponding to end faces of the two mask portions, wherein said side walls are formed so as to be between and offset from end portions of the semiconductor element;

forming a second mask layer on the slit sidewalls, thereby reducing the width of the slit; and

etching the conductive layer using the first and second mask layers to separate the conductive layer into at least two conductive layer portions, the at least two conductive layer portions being separated by a distance which is less than the minimum processing feature size.

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28. (Amended) A method of forming a semiconductor device, comprising:

- defining an active area in a substrate;
- forming source and drain regions in the active area with a gate structure overlying the substrate therebetween;
- forming a conductive layer over the substrate and the gate structure;
- forming a first mask over the conductive layer;
- performing photolithography to form a slit in a part of the first mask layer overlying the gate structure;
- forming a second mask layer on the first mask layer and in the slit;
- selectively etching away the second mask layer to leave the second mask layer on side faces of the first mask layer in the slit; and
- etching the conductive layer using the first and second mask layers as a mask, thereby patterning the conductive layer into at least two portions separated by a distance which is less than a minimum processing size, wherein opposing faces of the at least two portions extend over a central portion of the gate structure.

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31. (Amended) A method of semiconductor manufacture comprising:

- forming a first layer over a semiconductor substrate;
- patterning the first layer to have holes with sidewalls separated by a width equal to a minimum feature size achievable by a lithographic process used during manufacture of the device;
- forming a second layer on the sidewalls so as to reduce the width of the holes below the minimum feature size;
- patterning a conductive layer beneath the first and second layers using the holes to form openings in the conductive layer that are smaller in size than the minimum feature size, wherein the openings in the conductive layer are about 1/3 the minimum feature size.

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34. (Amended) A method of forming a semiconductor device, comprising:

defining an active area in a substrate;

forming source and drain regions in the active area;

forming a gate electrode overlying the substrate between the source and drain regions, the gate electrode having a width no larger than a minimum processing size available with a photolithographic process associated with forming the gate electrode;

forming a first layer over at least the active area of the substrate; and

forming a contact hole in the first layer in an area above the gate electrode, the contact hole having a width smaller than the minimum processing size of the photolithographic process, said contact hole extending over at least one of the source and drain regions, and extending over only a portion of the gate electrode.

38. (Amended) A method of forming a semiconductor device, comprising:

forming a structure having a first width on a substrate;

forming a first layer over at least the structure; and

forming a slit in the first layer located over the structure, the slit having sidewall spacers separated by a second width,

wherein the sidewall spacers are centrally arranged interior to edges of the structure, and

wherein the second width is smaller than a minimum feature size achievable with a lithographic process used for making the semiconductor device.

Please renumber claim 40 as claim 39:

39. A method of forming a semiconductor device, comprising:

defining an active area in a substrate with isolation structures, the isolation structure having a width no larger than a minimum processing size available with a photolithographic process associated with forming the isolation structure;

forming a first layer over at least the isolation structure; and

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forming a contact hole in the first layer in an area above the isolation structure, the contact hole having a width smaller than the minimum processing size of the photolithographic process.